HIDRODINAMIC FORCE INFLUENCED HEAT TRANSPORT AT CONVECTIVE DRYING

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Abstract

This paper presents results of experimental and theoretical approach of heat transfer around simple porous bodies during forced convection. The calculated heat transfer coefficients using the measured parameters shows a higher values as the heat transfer coefficients values from the dimensionless Nusselt correlations given in the literature. The reason of this difference was provided by theoretical way using a boundary layer theory. There exist general equations for the heat, mass and momentum transfer on the boundary layer. Numerous experimental and theoretical studies deal with the solution of these equations by analytical or numerical way. An analytical model was proved by this experimental study; and the existence of the non-zero surface velocity caused by hydrodynamic force is verified during the steady-state period of convection drying.